Supplemental Table 1: Inclusion and exclusion criteria.

Inclusior Criteria
Hepatocellular carcinoma in a cirrhotic liver
Surveillance of liver cirrhosis
Cancer staging or follow-up
Liver lesion characterization
Exclusion Criteria
Pregnancy
Previous allergic reactions to iodinated contrast media
Impaired renal function (glomerular filtration rate < 30mL/min/1.73m^2)

Supplemental Table 2: Image quality score determinants.

Score	Sharpness	Noise	Diagnostic Acceptability	Lesion Conspicuity
1	Unacceptable	Unacceptable	Unacceptable	Not dinstinct
2	Poorer than average	Above average	Sub-diagnostic	Barely distinct
3	Average	Average	Average	Moderately distinct
4	Better than average	Less than average	Above average	Fairly distinct
5	Sharpest	Minimum or no noise	Excellent	Definitely distinct

	Reader 1			Reader 2		
	VMI+	**VMI**	**M_0.6**	**VMI+**	**VMI**	**M_0.6**
<1 cm (n = 36)						
TP	24	20	19	26	22	19
TN	17	17	17	16	16	16
FP	0	0	0	1	1	1
FN	12	16	17	10	14	17
Se (95% CI)	67% (49%-81%)	56% (38%-72%)	53% (35%-70%)	72% (55%-86%)	61% (43%-77%)	53% (35%-70%)
Sp (95% CI)	100% (80%-100%)	100% (80%-100%)	100% (80%-100%)	94% (71%-100%)	94% (71%-100%)	94% (71%-100%)
≥1 cm (n = 25)						
TP	22	21	21	24	24	23
TN	16	16	16	14	14	15
FP	0	0	0	2	2	1
FN	3	4	4	1	1	2
Se (95% CI)	88% (69%-97%)	84% (64%-95%)	84% (64%-95%)	96% (80%-100%)	96% (80%-100%)	92% (74%-99%)
Sp (95% CI)	100% (79%-100%)	100% (79%-100%)	100% (79%-100%)	87% (62%-98%)	87% (62%-98%)	94% (70%-100%)
Overall (n = 61)						

TP	46	41	40	50	46	42
TN	33	33	33	30	30	31
FP	0	0	0	3	3	2
FN	15	20	21	11	15	19
Se (95% CI)	75% (63%-85%)	67% (54%-79%)	66% (52%-77%)	82% (70%-91%)	75% (63%-85%)	69% (56%-80%)
Sp (95% CI)	100% (89%-100%)	100% (89%-100%)	100% (89%-100%)	91% (76%-98%)	91% (76%-98%)	94% (80%-99%)
Inter-reader agreement (κ)						
VMI+	0.89					
VMI	0.86					
M_0.6	0.83					

Supplemental Table 3: Diagnostic accuracy and inter-reader agreement of both readers for the identification of hypervascular liver lesions. TP= true positive, TN= true negative, FP= false positive, FN= false negative, Se= sensitivity, Sp= specificity, CI = confidence interval.

Online Appendix

Reference standard rationale

A contrast-enhanced MRI examination was considered the reference standard. No treatment was administered in the time interval between the MRI and DECT studies. Since the purpose of our investigation was focused on the identification of hypervascular liver lesions, no further data regarding the histopathologic characterization were recorded. Liver lesions were classified only for the purpose of this research study, on the basis of the MRI features [1] in association with the patients' clinical information. Two readers with 12 and 7 years of experience in abdominal imaging and access to patient data performed hypervascular lesions detection analysis in consensus on the MRI examinations, using all the available sequences.

MRI Technique

MRI examinations were performed on a 1.5T scanner (MAGNETOM Avanto, Siemens Healthcare, Erlangen, Germany) using the phased-array torso (6 elements) and spine (8 elements) coils. The system gradient strength was 45 mT/m.

T2*-weighted axial gradient-echo images were acquired during breath-hold with the following pulse sequence parameters: repetition time (TR), 4000 ms; echo-time (TE), 125 ms; flip angle, 150°; echo-train length, 50 echoes; echo spacing, 4.82 ms; bandwidth, 500 Hz/pixel; GeneRalized Autocalibrating Partial Parallel Acquisition (GRAPPA) factor, 2; 32 slices with 6 mm slice thickness and center-center slice distance of 7.2 mm; acquisition matrix, 256x256; pixel size, 1.3x1.3 mm^2; total acquisition time of 66 s; 17 s per breath-hold.

After T2*-weighted imaging, Volumetric Interpolated Breath-hold Examination (VIBE) fat-saturated sequences were acquired in the axial plane during breath hold [2]. The following pulse sequence parameters were applied: TR, 4.15 ms; TE, 3.0 ms; flip angle, 12°; bandwidth, 375 Hz/pixel; GRAPPA factor, 2; acquisition matrix (frequency, phase, slice), 256×120×80; voxel size, 1.5×1.5×3.0 mm^3; and acquisition time in a single breath hold, 13 s. The acquisition was performed before and after gadolinium-based contrast

administration (0.1 mmol/kg gadobenate dimeglumine, MultiHance, Bracco, Princeton, NJ) with late arterial phase acquired at 35 s, portal venous phase at 70 s, and delayed phase at 180 s.

References

1 Silva AC, Evans JM, McCullough AE, Jatoi MA, Vargas HE, Hara AK (2009) MR imaging of hypervascular liver masses: a review of current techniques. Radiographics 29:385-402

2 Dobritz M, Radkow T, Nittka M, Bautz W, Fellner FA (2002) [VIBE with parallel acquisition technique - a novel approach to dynamic contrast-enhanced MR imaging of the liver]. Rofo 174:738-741